UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
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APR 19 1994

Ref: 8HWM-FF

Mr. Richard Schassburger
U.S. Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, CO 80402-0928

Re: Operable Unit 5, Technical Memorandum 13 (TM 13)

Dear Mr. Schassburger:

This letter formally transmits EPA's review comments concerning the above referenced document. These comments and those submitted by the Colorado Department of Health must be addressed to the satisfaction of EPA, the lead regulatory agency for Operable Unit 5 (OU 5), in order for the document to be approved. In accordance with the Interagency Agreement, TM 13 must be approved before submittal of the draft Resource Conservation and Recovery Act Facility Investigation/ Remedial Investigation Report for OU 5.

Please work with our point of contact, Bonnie Lavelle, (303) 294-1067, to agree on a means of resolving the enclosed comments.

Sincerely,

Martin Hestmark, Manager
Rocky Flats Project

Enclosure

cc: Joe Schieffelin, CDH
Jen Pepe, DOE
Ed Mast, EG&G

# EPA COMMENTS ON TECHNICAL MEMORANDUM 13, OPERABLE UNIT 5 MODEL DESCRIPTION

## GENERAL COMMENTS:

Technical Memorandum 13 (TM13) is missing a discussion of the application of the selected models to the site specific conditions at Operable Unit 5 (OU 5). The text states that the technical approach to be used in applying the selected models to the OU 5 conditions will be described in detail in the Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation/Remedial Investigation (RFI/RI) report. In order to comply with the model description requirements stated in the interagency agreement (IAG), the discussion of model application in TM 13 must include the following information:

a. A figure depicting the grid to be used for the groundwater model that indicates the model domain and cell size.

b. A description of the sources to be modeled that describes or depicts the location of all sources and how they will be spatially and temporally represented in the model(s).

c. A description of the data sets that will be used to calibrate the models.

d. A description of the data that will be used to provide initial estimates of all model parameters.

e. Detailed information on model calibration, including calibration criteria and calibration targets.

## SPECIFIC COMMENTS:

Section 2, Figures 2-2, 2-4, and 2-6: The relative significance of exposure pathways can be determined only after risk estimates are calculated. At this early stage of the remedial investigation, contaminants of concern have not been identified, and little information is available concerning the contaminated media, and level of contamination. The assumptions regarding the relative significance of exposure pathways should be viewed as "best guess" at this time. These sorts of assumptions should not form the basis for eliminating exposure routes from the quantitative risk assessment. If this approach is used, it could compromise the risk assessment and result in a significant underestimation of risk.

An acceptable approach is to determine whether an exposure pathway is complete or incomplete. Incomplete pathways can be ignored, but risk for all complete pathways should be quantified. EPA's comments on Technical Memorandum 12, Exposure Scenarios for Operable Unit 5, address the exposure pathways which must be quantitatively evaluated in the risk assessment. TM 13 needs to be consistent with TM 12 and recognize the following exposure pathways as complete:

a. Groundwater ingestion by future on site residents
b. Inhalation of vapors inside future on site residences
c. Inhalation of vapors while showering by future on site residents
d. Dermal contact with groundwater by future on site residents
e. Particulate inhalation by future on site residents

Figures 2-2 and 2-4: The conceptual model indicates that ingestion of groundwater is considered a negligible or incomplete exposure pathway. This conclusion disregards the results from a pump test conducted in Woman Creek valley fill alluvium during the OU 1 investigation. A well point in the alluvium was pumped at a rate of 1.5 gallons per minute (gpm) for 8 hours without depleting the source of groundwater (EG&G, 1992). This test was conducted in December, typically when the lowest water levels of the year are measured. A well screened in this alluvium will exceed the daily water requirement of 240 gallons that is used in EG&G's domestic water supply analyses as a minimum requirement for a domestic use well. Therefore, ingestion of groundwater should be considered a potential exposure pathway in the Woman Creek valley fill alluvium on the basis of EG&G's own criterion for domestic well production.

Figure 2-3: The hydrogeologic profile shown in Figure 2-3 does not depict potential groundwater pathways through bedrock. A bedrock groundwater pathway should be depicted on Figure 2-3.

Section 3.2: Groundwater Flow Model: A major difficulty that may be encountered when using the MODFLOW program to model groundwater flow at OU 5 will be interpolation error. Interpolation errors arise when calibration well locations do not coincide with model nodes. These errors create problems when water levels simulated at the center of the nodes are compared with water levels observed at wells within the model cell, but some distance from the node. In areas of considerable relief, such as the hillside portion of Ou 5, the differences in elevation between the two points will lead to significant differences in their water level elevations, even if the model is a reasonable representation of the actual system. This problem is compounded when the saturated thickness of the layer to be modeled is very small relative to the overall topographic relief. The grid spacing of the model should be fine enough to minimize interpolation error in the hillsides, or the model will be difficult, if not impossible, to calibrate.

Section 3.2., Groundwater Flow Model for Saturated Conditions, Page 33: TM 13 states that validation of the model will not be conducted due to the lack of sufficient data to form an independent data set. DOE must acknowledge in TM 13 that not conducting validation is a source of error in the model results and, most importantly, the uncertainty this introduces must be considered when analyzing the results and making decisions based on those results.

Section 3.3.1, Page 38: The text states that a one dimensional analytical solute transport model will be appropriate to model contaminant transport through the vadose zone at the OU 5 landfill because little data are available. However, even a one-dimensional unsaturated zone transport model will require reasonably accurate site specific estimates of unsaturated zone hydraulic conductivity, matrix potential, and water content of soil. If site-specific field data are not available to estimate these parameters, the model should not be run. Include a summary of the site specific data for these parameters in Table 3-1.

Section 3.4, Surface Water Model: The selected surface water model appears to be complex and data intensive, as indicated by the flow charts on Figures 3-2 and 3-3 and the number of parameters listed in Table 3-2. The possibility of a nonunique model solution is enhanced when there is little or no prior information on parameter values (Anderson and Woessner 1992). Therefore, the successful application of this model will probably require that site-specific data be gathered to derive initial estimates of the 21 parameters listed in Table 3-2 and define allowable value ranges that are probably more restrictive than those listed in Table 3-2.

The description of the technical approach (to be included in the Phase I RFI/RI) should indicate which of the parameters listed in Table 3-2 will rely on initial estimates and value ranges that were based on field data, estimates from literature, or arbitrary values.

Please provide EPA a copy of the 1992 ASI report, "Preliminary Draft, Data Summary Report, Final Phase I RFI/RI Work Plan, Water Quality and Bottom Sediment Chemistry Data Assessment, Rocky Flats Plant, Woman Creek Priority Drainage (Operable Unit 5)".

Section 3.4.1, Page 42: It's difficult to understand exactly what the six scenarios are that will be modelled. Rewrite this section to clarify the scenarios.